



Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

INNOVATIVE RADIOTHERAPY TECHNIQUES

A MULTICENTRE TIME-DRIVEN ACTIVITY-BASED COSTING STUDY

Frank Hulstaert (KCE), Anne-Sophie Mertens (Möbius),
Caroline Obyn (KCE), Dries Van Halewyck (Möbius),
Brieuc van der Straten (Möbius), Yolande Lievens (UZ Gent)

Accelerated partial breast irradiation (APBI)

- Intraoperative (IORT)
- Brachy 4-5 days
- Low risk patients

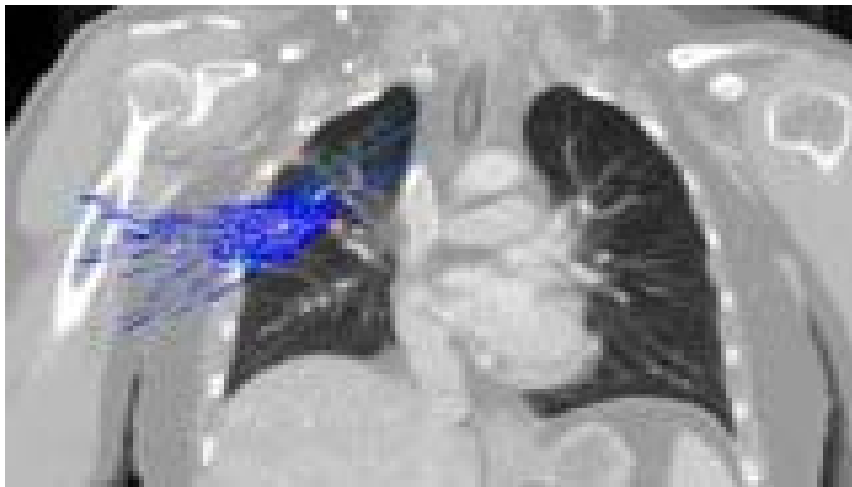
Example of IORT:
Mobetron
(MeV electrons)



Example: Intrabeam (kV photons)

	Lumpectomy	IORT (15 to 30 min)	WBI (3 to 7 weeks)	Ext. boost (2 weeks)
Whole Breast Irradiation (WBI)	x		x	
WBI + ext. boost	x		x	x
Accelerated partial breast irradiation with IORT	x	x		
IORT boost + WBI	x	x	x	

Stereotactic body radiotherapy (SBRT)



- Few fractions
- High dose
- Precise
- Extra imaging + QA

Coverage with evidence generation

Innovation

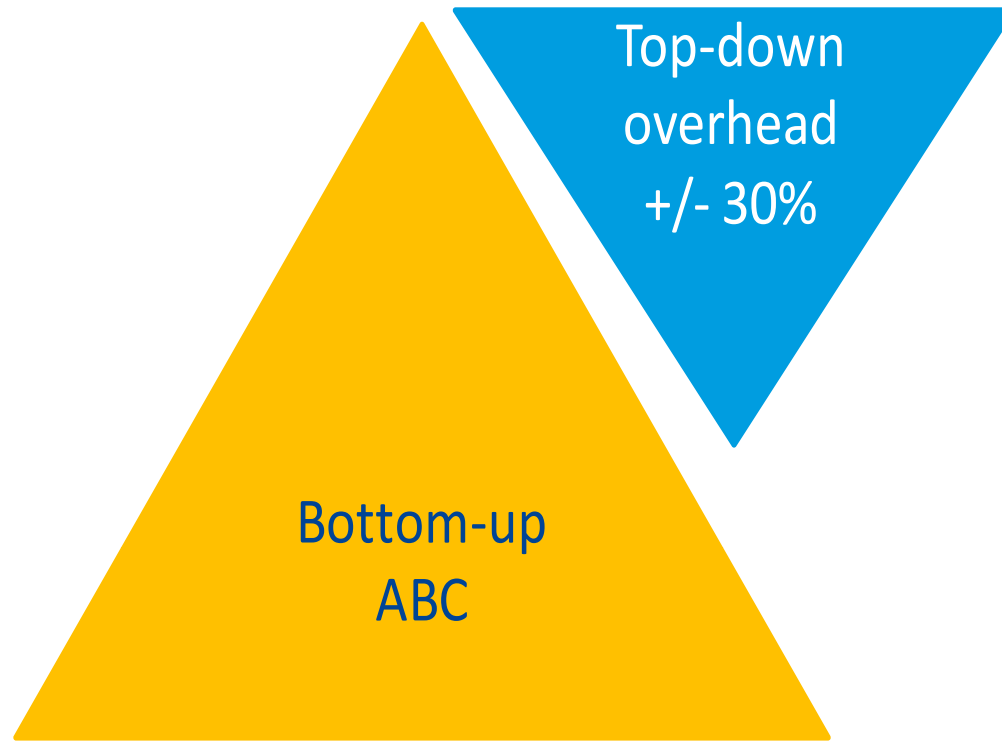
- Stereotactic body radiotherapy (SBRT)
- Accelerated partial breast irradiation (APBI)
- Intraoperative boost breast

Staged introduction

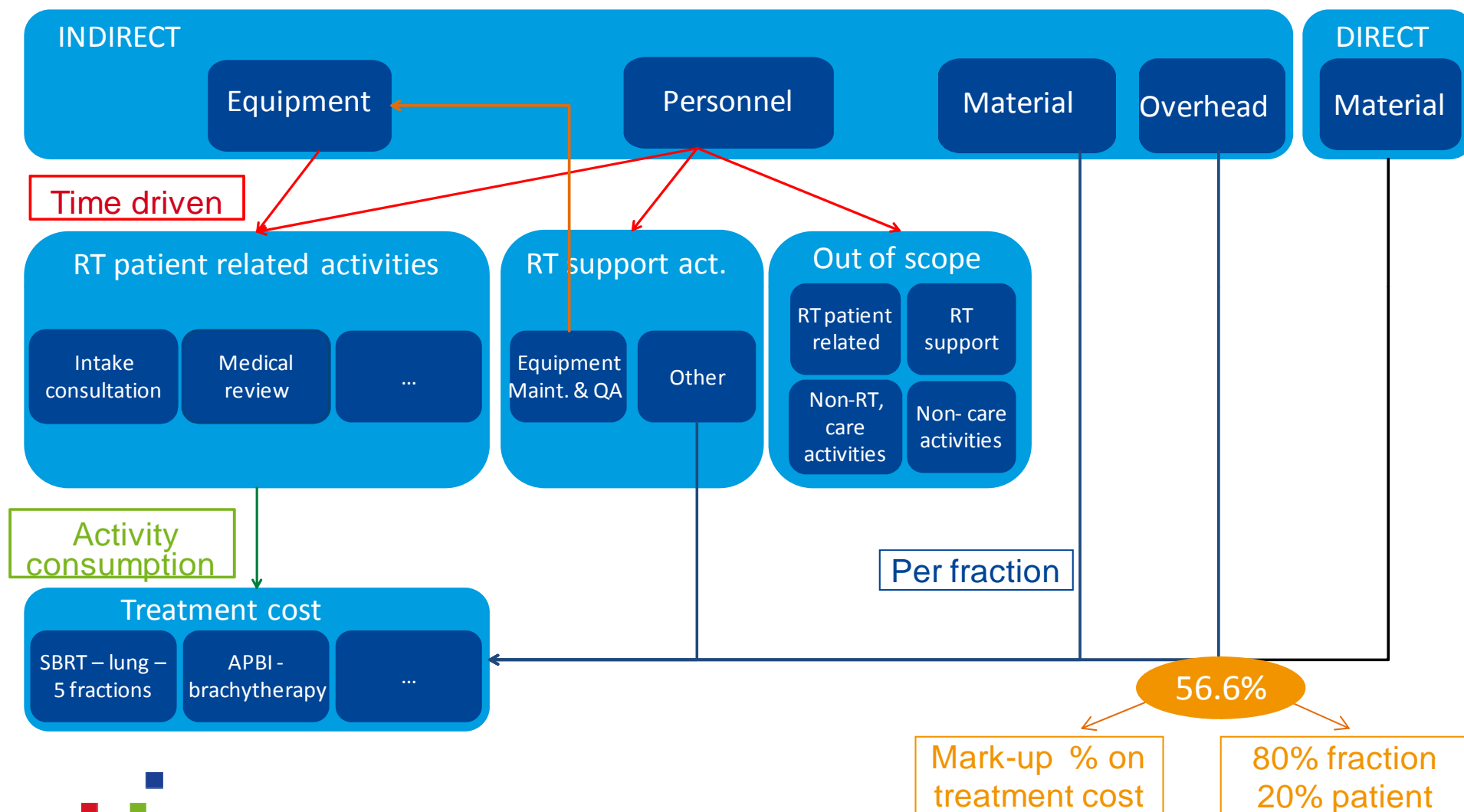
- Indications (WG1)
- **Costs (WG2)**
- Registry (WG3)
 - Indication + technique
 - Volume + (Outcome)

- Francis Colardyn (Consultant), Irina Cleemput (KCE), Sophie Gerkens (KCE), Raf Mertens (KCE), Bert Winnen (RIZIV – INAMI), Hilde Engels (RIZIV – INAMI), Saskia Van den Bogaert (FOD Volksgezondheid – SPF Santé Publique)
- An Fremout (FANC – AFCN), Isabelle De Pau (FANC – AFCN); Carolien Claeys (FANC – AFCN), Liesbeth Van Eycken (Stichting Kankerregister – Fondation registre du cancer), Nancy Van Damme (Stichting Kankerregister – Fondation registre du cancer), Karen Vos (Stichting Kankerregister – Fondation registre du cancer)
- *De Belgische radiotherapeuten en hun medewerkers die meewerkten in de werkgroepen en de kostenstudie.*
- CHU de Liège: Philippe Coucke, Eric Lenaerts, Jean Vanderick, Nicolas Jansen, Philippe Martinive
- UZ Gent: Yolande Lievens, Barbara Vanderstraeten, Marc Van Eijkeren
- GZA Ziekenhuizen Sint-Augustinus, Antwerpen: Philippe Huget, Katrien Erven, Rita Reymen, Reinhilde Weytjens, Mark Vos
- UZ Brussel: Mark De Ridder, Thierry Gevaert
- Institut Jules Bordet, Bruxelles: Paul Vanhoutte, Luigi Moretti, John Vercauteren
- UZ KULeuven: Karin Haustermans, Jan Verstraete
- OLV Ziekenhuis, Aalst: Luc Verbeke, Samuel Bral, Heidi Roelstraete, Stijn Van Der Heyden, Pol Decroos
- Jessa Ziekenhuis, Hasselt: Marc Brosens, Paul Bulens, Katrien Spaas, Goele Kippers
- Centre Hospitalier Jolimont: Carine Mitine, Christian Nicolas, Jean-François Rosier
- Hôpital Sainte-Elisabeth, Namur: Vincent Remouchamps, Hervé Marchal, Christian Sprumont, François Sergent
- *Experts van andere radiotherapie centra die deelnamen aan de werkgroepen:*
- URA, Antwerpen: Danielle Van den Weyngaert, Bie De Ost, Dirk Van Gestel
- AZ St. Jan, Brugge-Oostende: Geertrui De Meestere, Sarah Roels
- AZ St. Lucas, Gent: Frank Bouttens, Pieternel Thysebaert
- AZ St. Maarten Duffel: Philippe Spaas, Valerie Vandeputte
- CHIREC, Bruxelles: Richard Burette
- CH Peltzer-La Tourelle, Verviers: Olivier De Hertogh
- CHU Charleroi: Anne-Rose Henry
- Clinique St. Jean - Bruxelles: Sophie Cvilic
- Cliniques de l'Europe, Bruxelles: Carl Salambier
- Heilig Hartziekenhuis, Roeselare: Ivan Staelens
- Grand Hôpital de Charleroi St. Joseph, Gilly: Françoise Gilsoul
- AZ Groeninge, Kortrijk: Antoon Lambrecht
- RHMS – Clinique Louis Caty, Baudour: Joelle Fraikin
- AZ Turnhout: Jean Meyskens, Michel Martens, Katrien Geboers
- UCL St. Luc, Bruxelles: Pierre Scalliet, Xavier Geets
- Sara Appeltants (FOD Economie – SPF Economie),: Kris Engels (RIZIV – INAMI), Chris Hubin (RIZIV – INAMI), Alphonse Thijs (RIZIV – INAMI), Herwin De Kind (Vlaams Agentschap Zorg en Gezondheid), Hilde Smets (Vlaams Agentschap Zorg en Gezondheid), Vincent Ronflé (Varian), Bart van Acker (UMC St Radboud, The Netherlands), Hans Kaanders (UMC St Radboud, The Netherlands)
- Lieven Annemans (Gezondheidseconomie, UGent en VUB), Peter Dunscombe (Medical Physics and Oncology, University of Calgary, Canada), Lionel Perrier (Health technology assessment, Cancer Centre Léon Bérard, Lyon, France)

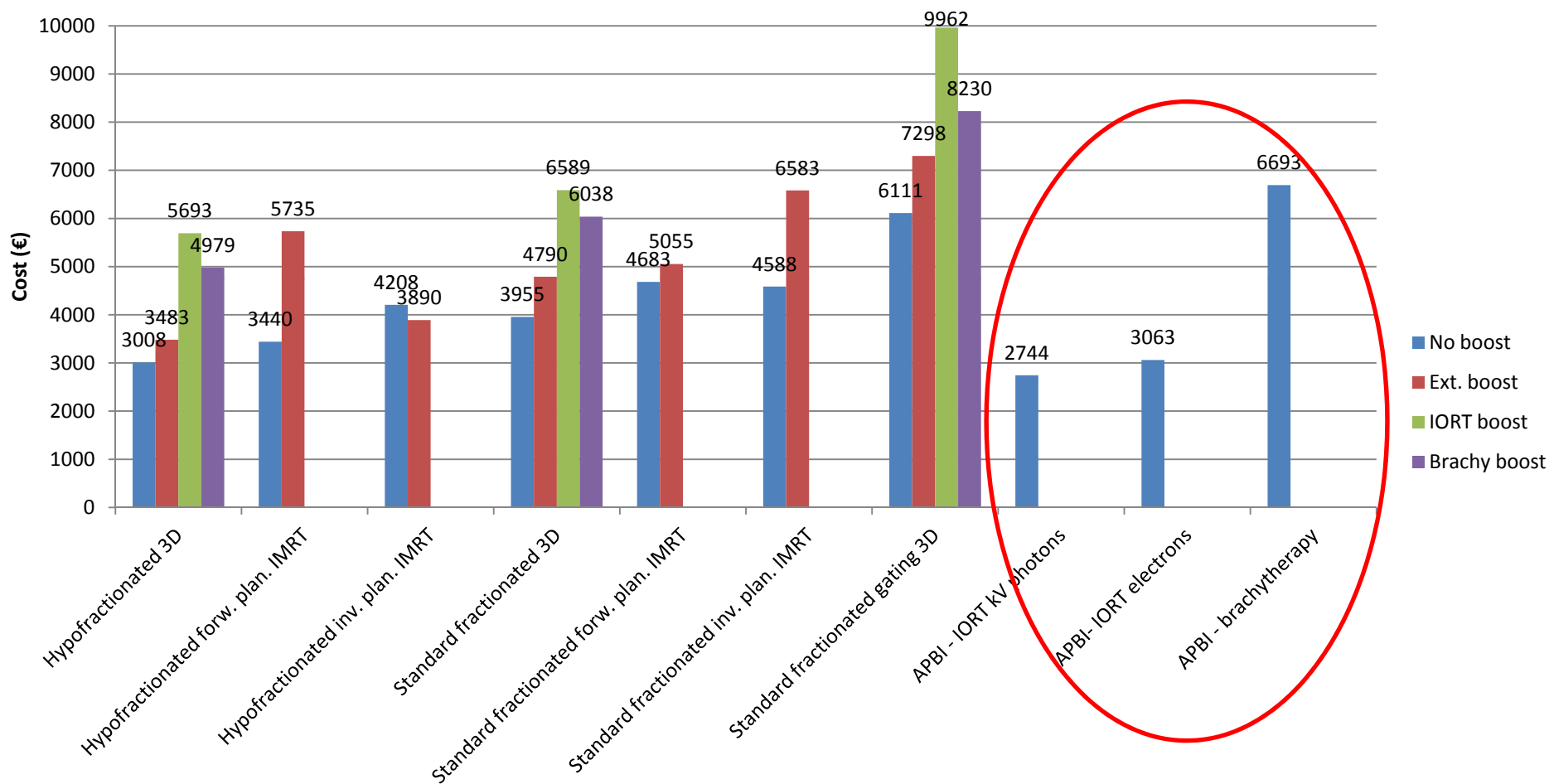
Time-driven activity-based costing



Time-driven activity-based costing



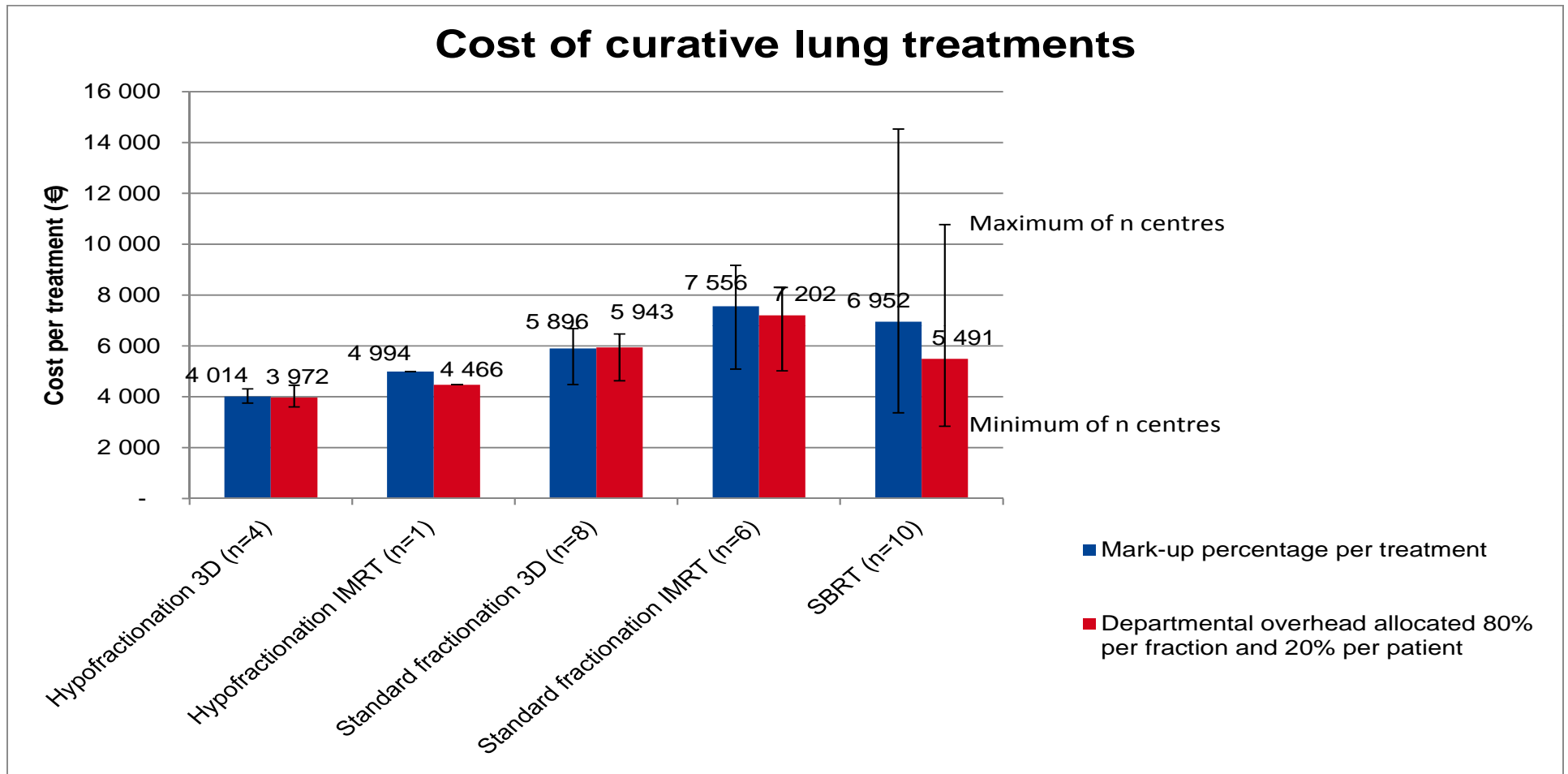
Cost of radiotherapy treatment of early breast cancer



Accelerated partial breast irradiation (APBI)

	APBI	Extra cost if used as a boost
IORT MeV electrons (Mobetron)	€ 3063 + surgery extension	€ 2500 to 4000 + surgery extension
IORT kV photons (Intrabeam)	€ 2744 + surgery extension	€ 2000 to 2500 + surgery extension
Brachytherapy	€ 6693 + Iridium isotope (4-5 days)	€ 2000 to 2500 + Iridium isotope (+ general anesthesia) (+ hospitalisation)
External beam	Not studied	€ 500 to 1500

Cost of lung cancer treatments with curative intent



Recommendations

- **Coverage based on real costs**
- **Evidence-based selection of indications**
 - **Clinical studies where needed**
- **Centralisation**
- **Quality system**
- **Registration**
- **Stimuli for execution of studies**

Colophon

- **Author(s):** Frank Hulstaert (KCE), Anne-Sophie Mertens (Möbius), Caroline Obyn (KCE), Dries Van Halewyck (Möbius), Brieuc van der Straten (Möbius), Yolande Lievens (UZ Gent)
- **Publication date:** 25 March 2013
- **Domain:** Health Technology Assessment (HTA)
- **MeSH:** Radiotherapy; Cost and Cost Analysis
- **NLM Classification:** QZ 269
- **Language:** English
- **Format:** Adobe® PDF™ (A4)
- **Legal depot:** D/2013/10.273/10
- **Copyright:** KCE reports are published under a “by/nc/nd” Creative Commons Licence
<http://kce.fgov.be/content/about-copyrights-for-kce-reports>.

This document is available on the website of the Belgian Health Care Knowledge Centre.